OFFICE ERGONOMICS

ASC Command Surgeon's Office
AMSAS-SG
DSN 793-2702

ASC – On The Line

Ergonomics

- **Ergonomics is the study of people in relation to their work place**
- **Improves the interaction between humans and the machines they use for work**
- **Advantages:**
  - Reduces injuries
  - Improves quality of life in the workplace
  - Improvements are often not expensive

Purpose – Office Ergonomics

- **What we will cover:**
  - How to setup comfortable workstation – using a step-by-step guide
  - Determine what office equipment is best to meet the needs of different individuals
  - Identify ways to reduce WMSD* risk

**WMSD: work-related musculoskeletal disease*

Office Ergonomics

- What's the problem with sitting all day?
- Which WMSD risk factors exist in an office setting?

Office Ergonomic Risk Factors

Stressors in the Office

- Highly repetitive motions with little recovery time
- Awkward postures (hands, arms, wrists, neck, shoulder, legs)
- Static muscle loading
- Visual/Mental demands - constant attention, stress
- Contact stress (thighs, arms, palms)

Office Locations or Similar Activities

- How many computers do you interact with? (office, home, and travel)
- Like activities (i.e., video games, musical instruments, hobbies)
- [illegible] re

Poor Office Ergonomics

Assessment Indicators

- Employee is wearing wrist splints
- Home-made modifications are observed
- Mouse not on the same level as the keyboard
- Reaching for the mouse
- Elbow's are not at 90 degrees, wrists are deviated
- Employee is leaning forward

Poor Office Ergonomics
Assessment Indicators (continued)

- Employee looks uncomfortable
- Employee's feet are not supported
- Employee's legs do not fit under the desk
- Employee's knees are touching the keyboard tray
- Employee's shoulders are hunched up

Creating the Ideal Workstation:
A Step-by-Step Guide

- **A DoD Ergonomics Working Group Plan to include:**
  - **Illustrated guidelines on how to adjust workstation**
  - **Information on how to organize work area and tasks**
  - ***Checklists*** **to evaluate a workstation**
  - **Specification lists when purchasing new equipment**

Creating the Ideal Workstation:

A Step-by-Step Guide

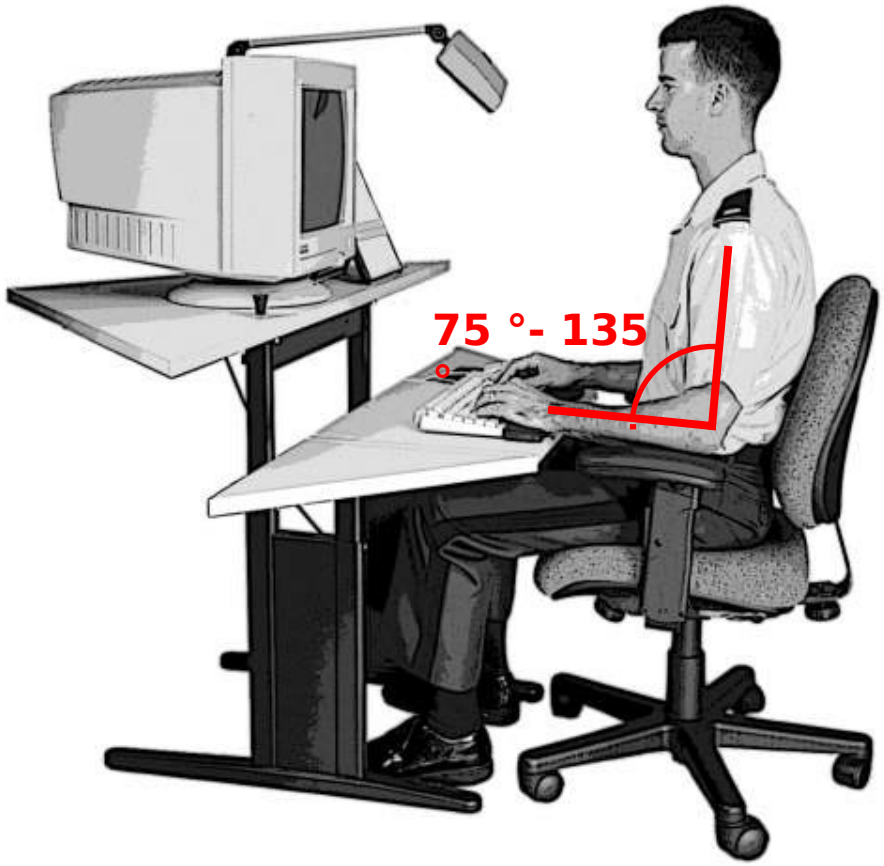
1. Work Area
2. Desk
3. Chair – seat
4. Chair – backrest
5. Footrest
6. Monitor
7. Keyboard
8. Mouse
9. Other input devices
10. Document holder
11. Lighting
12. Glare
13. Radiation

1. The Work Area

- Enough space to perform all tasks
- Allows you to place items you use most directly in front of you
- Comfortable room temperature

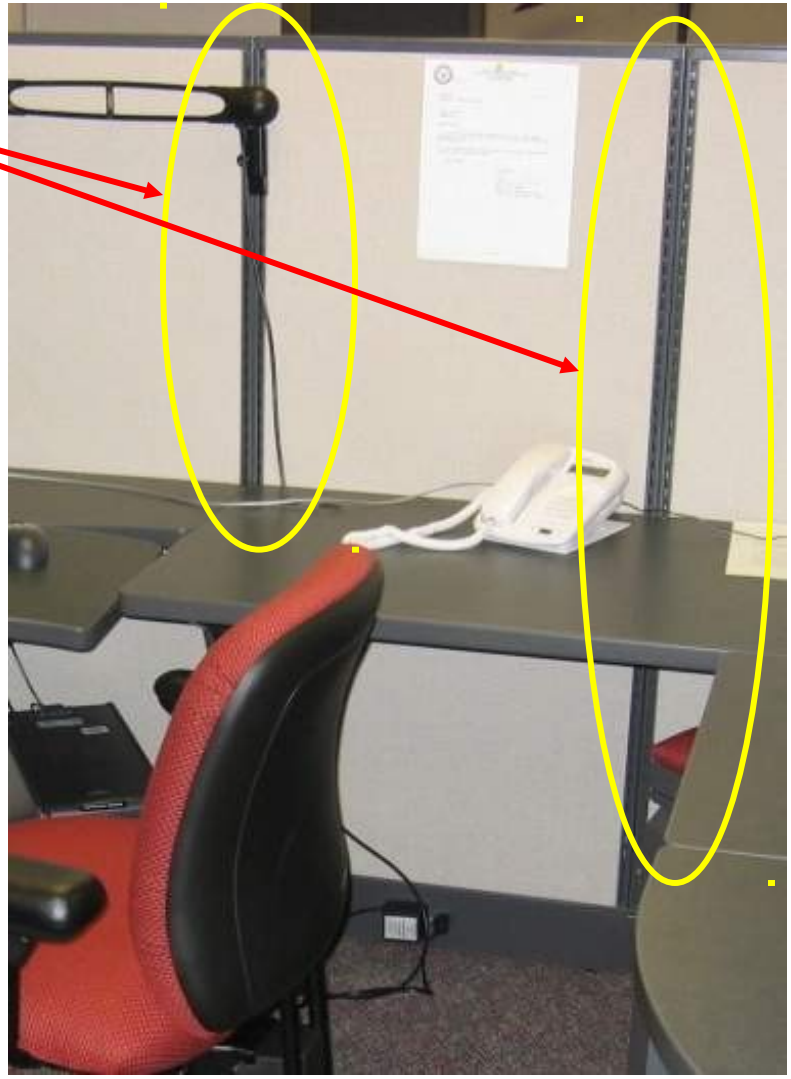
2. The Desk

- Your shoulders are relaxed
- Your upper arms are close to your body
- The angle between upper arm and forearm is 75° - 135 °



2. The Desk
Adjustable Surface

- **Adjustable surface**
- **Desktop is a matte finish**
- **Adjustable keyboard tray**
  - 22” to 28” from the floor
- **Acceptable under-desk clearance**
  - 17” for knees
  - 23½” for feet
  - 20” minimum width



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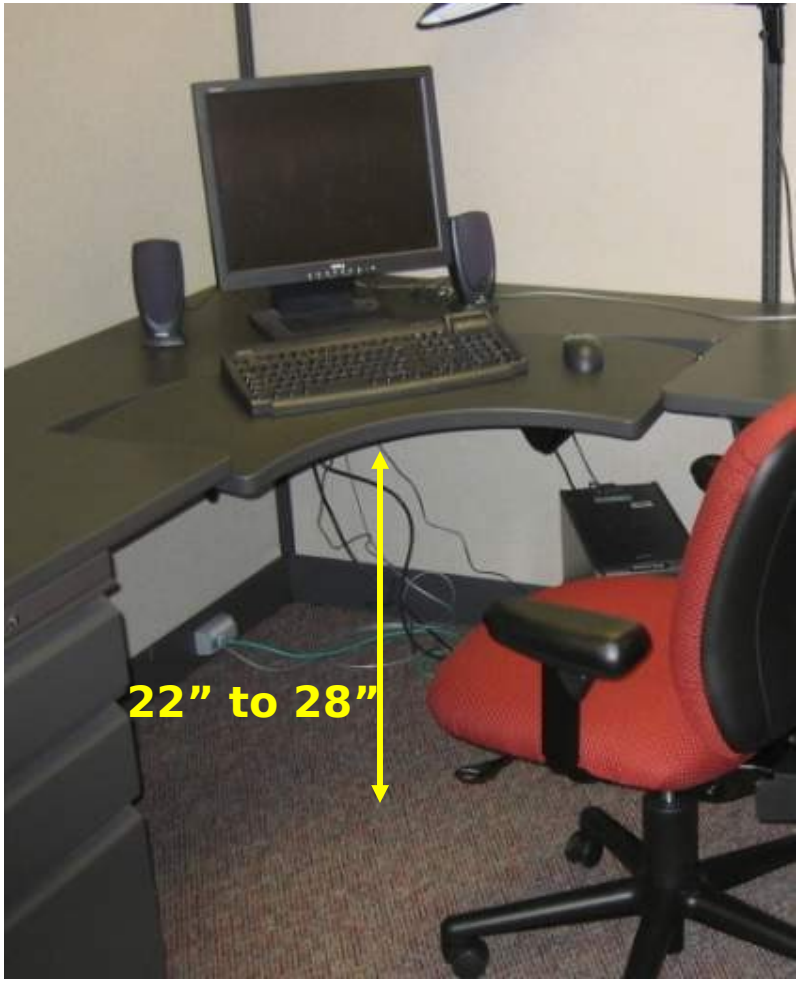

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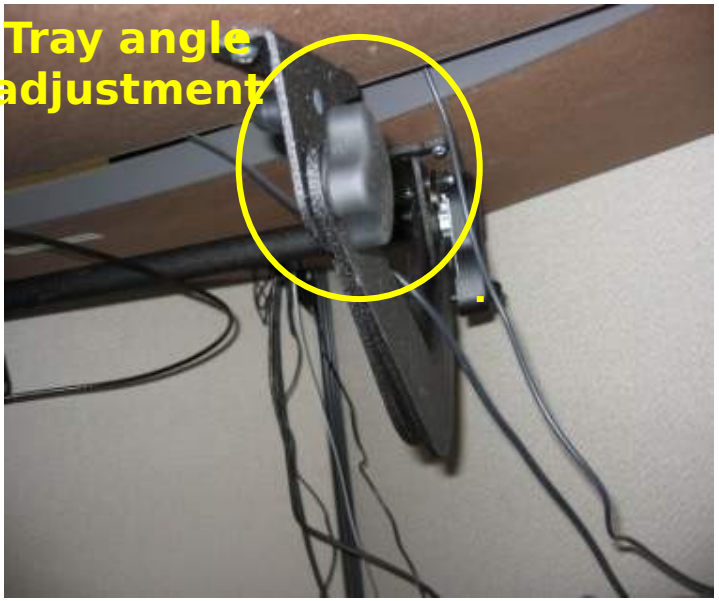

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Under-desk Clearance

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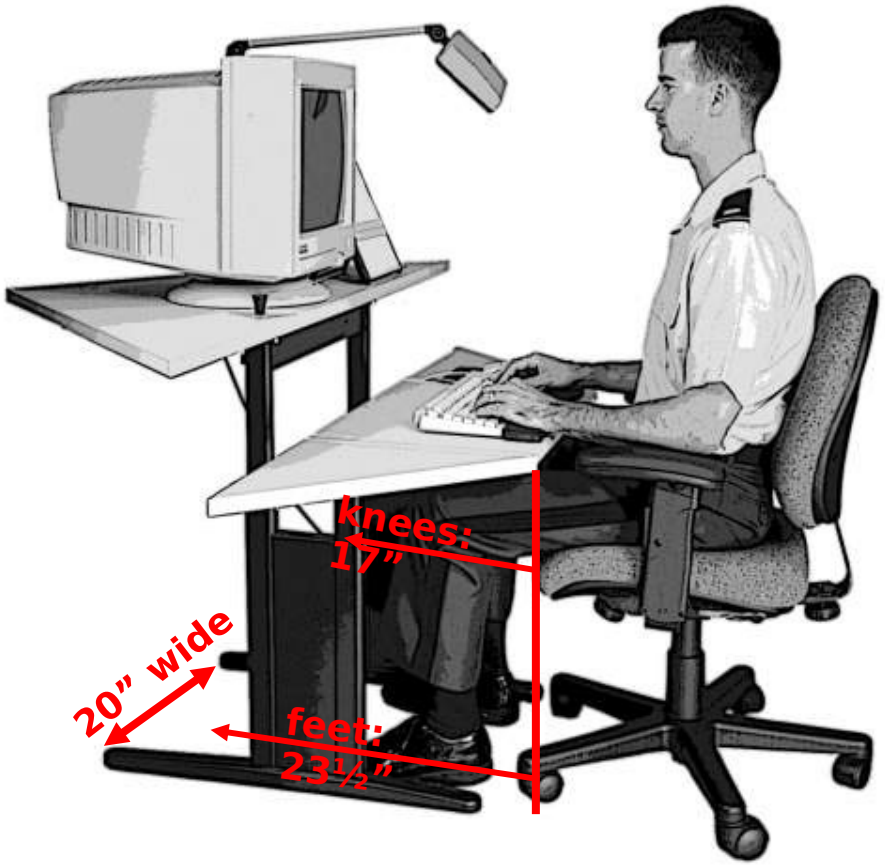
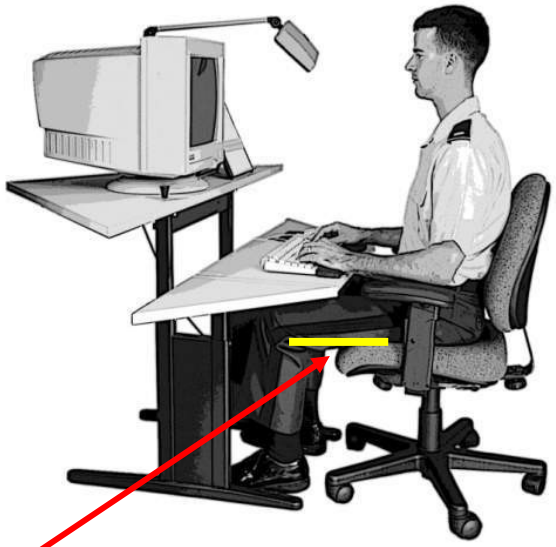


3. The Chair

- Easily adjustable (with one hand)
- Controls are easily reached
  - Seat height
  - Seat pan length
  - Seat pan slope
  - Backrest
  - Armrest
- Provide immediate feedback
- Operation of the controls are logical and consistent

3. The Chair – Seat

- **Adjustable desk**
  - Feet are flat on the floor
  - Back is supported
  - Then adjust your desk
- **Non-adjustable desk**
  - Adjust your chair to comfort
  - Feet may not touch floor – then add foot rest
- **Ideal Seat height**
  - Crease behind knee is slightly above the seat
  - Minimum adjustment: 16” to 20½”



3. The Chair – Seat

- **Seat Pan Length**
  - Length = 15” to 17”
  - With your back against the seat, the front edge of seat pan should not touch the crease of knee
- **Seat Pan – too short**
  - Inadequate thigh support
  - Leads to whole body discomfort
- **Seat Pan – too long**
  - Longer than buttock-knee length leads to leg discomfort
  - Forces you to sit forward away from the backrest

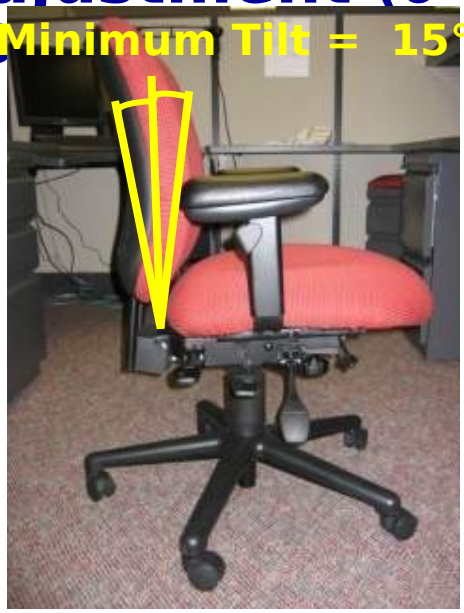
3. The Chair – Seat

Seat Pan Slope

- Adjustable range that allows for 5° of tilt (forward and backward)
- Should lock into position

4. The Chair – Backrest

- Surface minimum of 15” high and 12” wide
- Contour to the curve of your lower back
- Large enough to support entire back
- Have a forward and backward tilt (minimum of 15°)
- Extend high enough to support upper trunk, head, and neck when leaning back
- Allows for natural body movements
- Contains a lumbar (lower back) support
- Vertical seat back adjustment (6” to 10



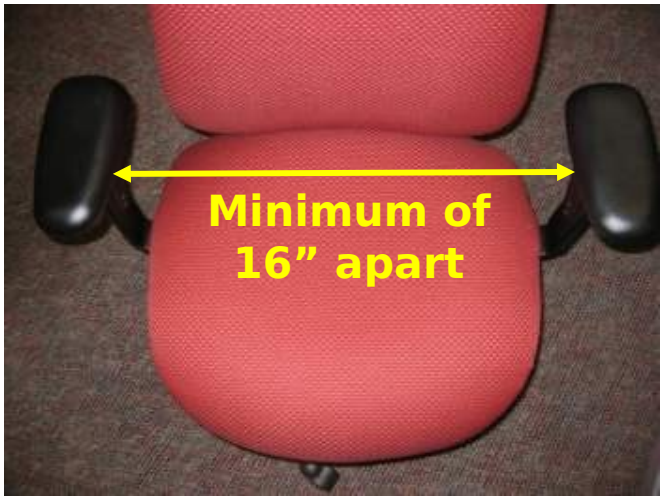
4. The Chair – Backrest

- **Vertical seat back adjustment**

- **Backrest tilt adjustment**

4. The Chair – Armrests

- **Adjustable armrests**
  - Minimum of 16” apart
  - Vertically adjustable to match their height to your elbows at rest
- **Armrest height and desk or keyboard height is the same**
- **Armrests should be:**
  - Long enough to support forearm
  - Wide enough to support forearm
  - Padded and soft
  - Removable



5. The Footrest

- **Needed if your feet do not rest flat with a correctly adjusted chair. It should be:**
  - Adjustable
  - Does not restrict leg movement
  - Easily removed
  - As wide as your hips
  - Large enough for the soles of both feet
  - Has a nonskid surface

- ***Temporary* fix: old phone books or binders**

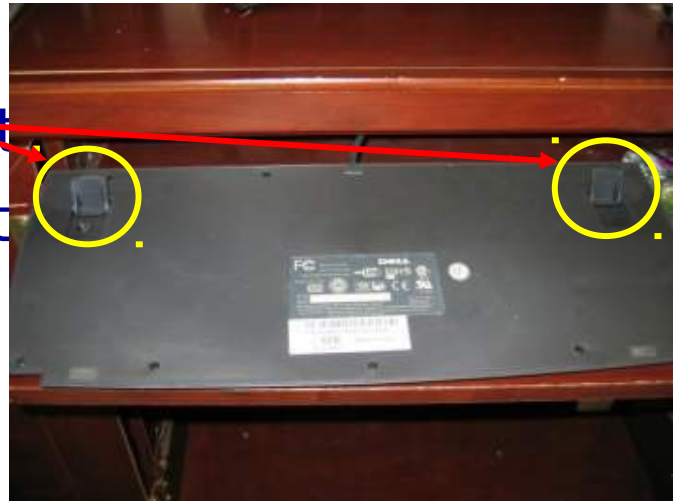
6. The Monitor

- **Images clear & stable**
- **Brightness & contrast controls**
- **Adjustable**
  - Tilts vertically
  - Swivels horizontally
  - If you wear bifocals, lower monitor to avoid neck tilt
- **Monitor position**
  - Gaze slightly down to view center of screen (top of monitor at eye height)
  - 16” minimum from eyes to screen

- **User preferred viewing distances:** 24” to 34”

7. The Keyboard

- **Choose a keyboard with:**
  - Independent angle adjustment
  - A thin profile to minimize wrist extension
  - A matte-finished surface
- **Adjust keyboard height:**
  - To reduce tension, low enough so arms are relaxed at your sides
  - Angle between upper arm and forearm is 75° - 135°



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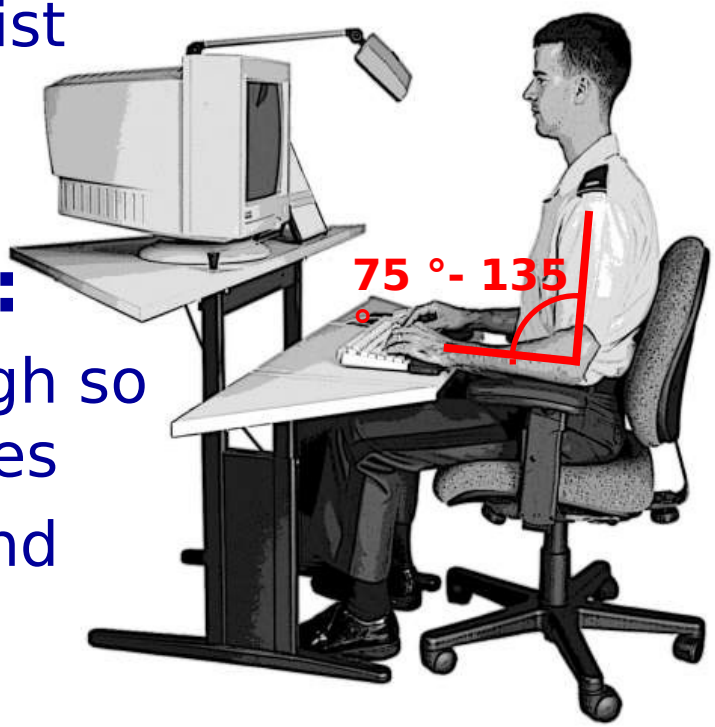
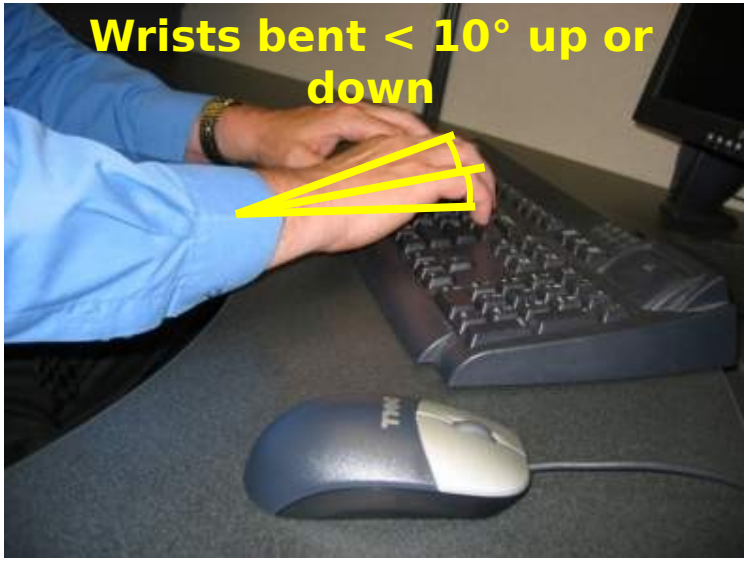


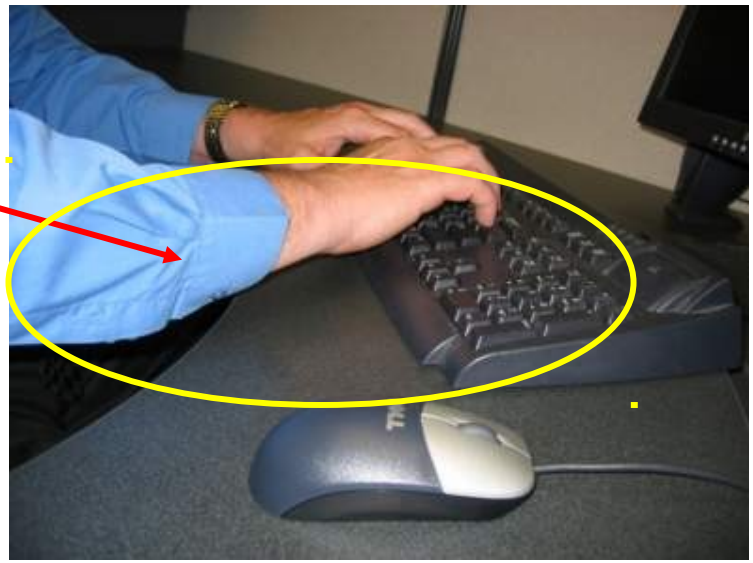
7. The Keyboard
(continued)

- **Adjust keyboard so that:**
  - Wrists are bent no more than 5° left or right
  - Wrists are bent no more than 10° up or down
- **If keyboard is not adjustable or too low, use paper books to raise it up temporarily**
- **If keyboard is too high, raise your chair or place some padding under your wrists to keep them from drooping**



7. The Keyboard

- **Keep your wrist floating, but keep forearms supported on armrests**
- **Wrist and palm rests:**
  - Reminds you to keep your wrist straight or only slightly bent
  - Intended for a wrist rest between typing, *not continually*



8. The Mouse

- Located directly in immediate reach zone
- Shoulders relaxed at side
- Positioned as close to your body as your keyboard
- Housed together with your keyboard on an adjustable work surface or tray

10. The Document Holder

- **Needed if you refer to printed materials often. It should be:**
  - Stable
  - Easily adjustable (height, position, and angle)
  - Placed next to your screen at the same height or between your screen and keyboard

- ***To exercise eyes: place holder at different distance***

Summary

- Office ergonomic WMSD risk factors exist in the office, home office, and TDY
- Potential solutions involve improving posture, reducing repetition, and minimizing duration

Summary

- **A good office setup/posture:**
  - Eyes are level with top of monitor
  - Neck is not bent
  - Back is slightly reclined/no slouching
  - Shoulders are relaxed
  - Arms are supported
  - Forearm, wrists, hands are straight
  - Mouse is next to the keyboard
  - Knees are slightly higher than the hips
  - Feet are firmly supported

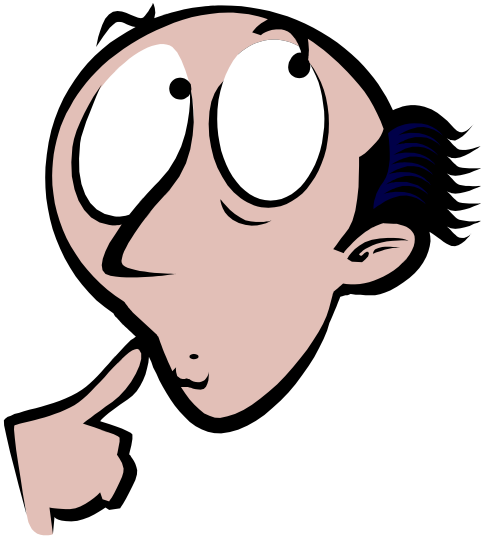
Ergonomic Sites

- **DoD Ergonomics Working Group**
  http://www.ergoworkinggroup.org/
- **USACHPPM Ergonomics Program**
  http://usachppm.apgea.army.mil/ergopgm/

- ***Both sites contain:***

DoD Working Group's *Creating an Ideal Workstation: A Step-by-Step Guide*

Any Questions?



Ergonomics POC

- **ASC Industrial Hygienist**

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